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ABSTRACT

This guide is designed to assist in the development of high technology training programs for secondary youth in conjunction with business and industry. The guide communicates issues and potential barriers to success encountered when planning and implementing a cooperative demonstration program. The following summary expresses lessons learned by the Student Cooperative Training Units (CTU) program: (1) Programs must develop a cost-effective plan for using technology and must rethink education and training programs; (2) training should allow students to apply their technical skills to the high technology workplace in order to solve the labor shortage dilemma. The North Clackamas (Oregon) School District's Owen Sabin Occupational Skills Center prepares students for entry into high technology fields. The CTU program links vocational-technical education and the private sector for high technology training. Due to local labor shortages, three clusters were included in the program: advanced information systems, graphic technology, and health occupations. Successful implementation or replication of a demonstration project mandates that the skills and support needed for project implementation are present. In addition, successful program management involves cooperative partnerships between education and training organizations and business/industry. (NLA)

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INTRODUCTION

This replication guide is designed to provide assistance to those interested in developing high technology training programs for secondary youth in conjunction with business and industry. The information contained in this guide represents a summary of eighteen months of program development and refinement efforts by business sponsors, project administration, and staff.

The purpose of the guide is to communicate information to the reader about issues and potential barriers to success that could be encountered when planning and implementing a Cooperative Demonstration Program. Although one cannot assume that each experience will produce exactly the same pitfalls or barriers; every program conducted in conjunction with business and industry will be unique. The program design will be determined by the labor and training needs of the business partner. Also the profile of the population to be targeted for training will influence project outcomes. Finally, it has been our experience that the administration and commitment demonstrated by the host institution or agency will shape and influence the success of the program more than any other individual factor.

PROGRAM RATIONALE

Nationally we are experiencing a crisis! Our economy can no longer rely upon the growth of the work force to increase productivity. Most of those who can work are already on the job. The country must wake-up to the need for investment in human resources. We

must begin to develop a cost-effective plan for utilizing technology and rethink education and training programs.

Our workers have, traditionally, been trained to function in a work environment that was relatively straight-forward, simple in structure. Each employee was expected to perform one uncomplicated task repetitively with machine-like efficiency. The work organization is rapidly changing!

In order to be more responsive to the marketplace and consumer tastes, companies are working to reorganize and restructure. Tayloristic methods of management and supervision are not well-suited to new organizational models. Technology is changing the design and complexity of job descriptions and the parameters defined for performance standards.

Employers are indicating a need for workers to assume more responsibility, to become accountable for their own production and quality control. Workers are asked to use their judgement and make decisions. They are being required to communicate effectively, solve problems, resolve conflicts, and function as a team member. Front-line workers are expected to think critically and apply their conclusions to the workplace. Top management sets expectations for high performance and repeatedly, employees meet the defined standards if they are working under proper conditions.

Employees also express different expectations in regard to their treatment and working conditions. In the past, workers responded to increases in wages or benefits as the most important incentives for performance. The new breed of worker seems to possess a

different perspective. Employees now indicate that they have reprioritized their values and set new, more meaningful goals.

Inspired performers on the job, report they feel that it is of supreme importance to be treated with respect; to be informed of the plans, goals, and activities within their company; to be able to influence their destiny or what directly affects their lives; and to be held accountable and contribute to the company. These ideals communicate a very different message from what top management had previously received. As a result, a very different company culture develops; employees have a higher level of commitment to the company. The individual is treated with a new sense of worth and dignity by managers that understand the new workplace.

The recent Workforce 2000 report recommends that an increasing emphasis should be placed on improving workers' skills through increased training. It has become clear that workers entering the work force in the future will be required to be more highly skilled and better trained than ever before. As the U.S. Department of Labor points out, before the year 2000 the majority of new jobs will require post-secondary education, but 80% will not require a college degree.

The Oregon Legislature is currently considering the passage of House Bill 3565, commonly known as the Oregon Educational Act for the 21st Century. Vera Katz, sponsor of the bill, advocates that it is crucial to our country's survival in today's global economy to create specialized, professional technical training for youth. Students will be required to demonstrate the ability to read, write, and compute at prescribed national and, ultimately,

international levels. It is mandated that they will demonstrate their ability to learn, think, reason, solve problems, and work effectively alone and in groups by the sophomore year in high school.

Upon successful completion of assessments at the 10th grade; students will be required to enter a training program for technical and professional certificates or associate degrees in selected industries and trades, or to enter a college preparatory program.

Oregonians have chosen to support this transformation from tradition to a multi-year, career-oriented, educational program for their children. They are demonstrating belief and acceptance of the realities expressed by The Commission on the Skills of the American Workforce in its report, " America's Choice: High Skills or Low Wages". The philosophy behind the Katz Bill and many of the concepts contained within the act were based on this report.

Locally, the need for qualified entry-level workers is increasing rapidly. Clackamas County is often referred to as Oregon's "hotspot" for growth. Traditionally the county has relied upon agriculture and timber for stability in its economy. Recently efforts have been made to diversify. High technology manufacturing, industrial warehouses, distribution centers, retail and Class A office sectors have located within the county.

The influx of economic development has created an acute shortage of qualified applicants in industries being impacted by current and emerging technology. Companies are finding that the technologies supporting their manufacturing or production of services are not reflected in the skills applicants possess. Business partners indicate a need for

dramatic changes in vocational training programs. All to often, students possess the technical skills to perform the job but are unable to apply high technology in the context of the workplace. Unfortunately, the training has "missed the mark" in solving the labor shortage dilemma faced by business and industry.

PROGRAM OVERVIEW

The North Clackamas School District covers more than forty square miles and is located twelve miles from downtown Portland, Oregon. The district operates seventeen elementary schools, four junior high schools and three senior high schools and a vocational/ technical training center.

The Owen Sabin Occupational Skills Center serves students from Clackamas, Rex Putnam, and Milwaukie High Schools, as well as those students living within district's boundaries who attend secondary parochial schools. OSC provides all students innovative training for the twenty-first century through state-of-the-art technology, applied academics, and an on-going partnership with business and industry.

The Skills Center prepares students for entry into the following occupational areas: Advanced Information Systems, Agricultural Occupations, Applied Computer Technology, Building Construction, Child Services, Electricity/Electronics, Forest Products, Graphic Technology, Health Occupations, Industrial Mechanics, Marketing and Management, and Nursery Landscaping. Student attendance is split between the high school and the Skills Center. Students complete their academic and non-vocational elective courses at the high school campus. Vocational instruction is received at the Skills Center. Vocational/technical

training is usually designed to cover three periods daily or approximately one-half of the school day.

At the local, state, and national levels, the shortage of qualified, entry-level workers in career fields impacted by high technology is growing rapidly. Deficiencies in the labor force have become particularly acute in the graphic technology, information management, and health care areas. The Student Cooperative Training Units Program was funded by the U.S. Department of Education to address the training needs in these three industries.

The "CTU" Project is an innovative approach to linking vocational/technical education and the private sector for high technology training. Joint planning and coordination of the program is conducted in conjunction with the local business community. The program design provides students with practical training in the use of high technology under actual work conditions.

Students from OSC are integrated into the work flow of local high tech companies. This industry-based training provides secondary-level students the opportunity to utilize state-of-the-art technology and to work collaboratively with the employees of their corporate sponsor.

Internships allow students to train in positions which facilitate the development of decision-making, problem-solving, and conflict resolution skills. Interns are directly accountable to their program instructor and company supervisor for monitoring the accuracy and quality of their performance.

Due to the severity of local labor shortages in information management, graphics, and health care; these cluster programs were targeted for inclusion in the demonstration program:

Advanced Information Systems (AIS)-Selected advanced-level students enrolled in AIS participate in CTU activities conducted in cooperation with **Precision Castparts Corporation.** Precision Castparts is a world leader in aerospace casting technology. It employs nearly 3000 employees located on four campuses in the local area.

Initially, students are counseled in regard to their career goals, academic success, and technical skill level. The classroom instructor assesses student readiness for industry placement. Internship training is structured to cover a six-week period, two hours per day. Interns rotate through approximately four training sites during the school year.

Training is designed to focus on computer hardware and software utilized by the aerospace industry. Emphasis is also placed on acclimating the trainee to Precision's corporate culture and integrating them into the work flow of the company.

Graphic Technology-Advanced-level students from Graphic Technology are eligible to participate in the customized industry-based training located at **Block Graphics, Incorporated.** Block Graphics is one of Portland's largest and fastest-growing graphic reproduction companies.

Students are required to follow the company's employee application process. Upon acceptance, students are scheduled for participation in new employee orientation, safety training, and a tour of the corporate facilities. Interns rotate through computer-aided design,

pre-press, platemaking, press operation, bindery, and the shipping and receiving departments. Trainees are on site four hours per day, two days per week.

Training is structured to provide emphasis in the departments that have incorporated the latest technological innovations into their production process.

Health Occupations-Second year students participate in clinical rotations in the health care industry. On-site experiences are developed in conjunction with **Providence Milwaukie Hospital**. Providence is one of three medical facilities serving the Portland area operated by The Sisters of Providence.

Trainees are placed in the Pharmacy, Diagnostic Imaging, Nursing Administration, Emergency Room, Employee Health, and Infection Control departments. Students are scheduled to work with a hospital staff member for four weeks, two hours per day.

Internships focus on providing both technical and supervisory training for students. Through participation in multi-disciplinary committee meetings and hospital accreditation activities, interns gain an understanding of the day-to-day administration and management of a health care facility.

Each of the CTU designs were evaluated to be successful by program instructors and business sponsors. Internship supervisors and vocational instructors indicated that, in comparison to regular hires, less training time was required in order to assist the intern in becoming "acculturated" and a productive employee in the department.

REPLICATION ISSUES

The decision to implement any new program should be made after careful consideration and reflection in regard to costs incurred and potential benefits. This statement is especially true when contemplating the decision to conduct a replicable, demonstration program. The management and coordination of a complex, multi-faceted program requires a phenomenal commitment by the institutional host or education agency and, in our case, the corporate sponsors. Also, successful implementation mandates that the project director possess the skills and have the support needed to create organizational changes necessary to implement the program.

Planning

This section is designed to outline the steps to follow if consideration is being given to replicating a cooperative industry-based training program. Administrators, managers, and staff should be involved in the strategic planning process and be encouraged to participate in brainstorming and problem-solving activities.

* **Determine school district interest in the CTU Program**
  (Does the Superintendent, Director of Secondary/Vocational Education, Building Principal, and The Board of Directors demonstrate commitment to vocational/technical training?)

* **Seek school district commitment to planning for program concept, determine if appropriate systems exist within the district to implement and support the project** (Accounting, Risk Management, Curriculum, Staff Development, Transportation, etc.)

* **Gain commitment from superintendent (district) and the principal (building) for obtaining funding and to conduct program planning**
  (If building-level administration changes, will commitment continue to be demonstrated by new administration and staff?)

* **Identify vocational/technical programs and teaching staff that will be involved in planning and implementing the program**
(Conduct planning activities that facilitate the involvement of administration and building staff members to develop ownership)

* **Identify prospective business partners for sponsorship of program**
(Conduct orientation meetings for business management, define benefits for program participation)

* **Gain written commitment from business which includes supervisor/staff responsibilities, resources allocated, training design, training plans/job descriptions, and expectations for trainee performance**

* **Establish resources for technical assistance**
(State Department of Education, Educational Service Districts, Regional Educational Laboratories, U.S. Department of Education, other local districts that have conducted similar programs)

* **Develop baseline management plan**
(Define program activities and projected timeline)

* **Obtain financial support for project**
(Consider district, donations from business, and other outside funding sources)

* **Develop job descriptions for staff and procedures for selection**

* **Recruit and select qualified, experienced administrators and technical instructors**

* **Assess need for staff development**

* **Conduct orientation and training for staff**

PROGRAM MANAGEMENT

Demonstration programs are innovative, creative approaches to training that often times require administrators and staff to scrutinize the decision-making process they have utilized in the past. Many new situations arise that will typically challenge traditional policies

and procedures which previously have proven to be adequate. As a result, new leadership and management styles will unfold.

Many educators only possess a vague, general concept of how to manage organizational change. We, in education, have not been called upon to perform or function as change agents. In the professional technical arena, new technology is necessitating major adjustments in both education and the workplace.

The changes that are occurring are looked upon with anxiety, fear, frustration, and uncertainty. This is especially true in education because we have had so little experience in dealing with the pressure that change creates.

Taking control and exerting influence are crucial aspects of change management. The person selected to manage the project must be seen as a leader by project staff members. Normally this will require that the project director be familiar with the education district and specific school or schools designated to participate in the project. If a person from outside the district is chosen to lead the project, too much time may be spent earning credibility and establishing a relationship with staff.

Most teachers are as unfamiliar with organizational change as are the administrators they work under. Educational administrators have been rewarded for maintaining the status quo. Historically they have performed their teaching assignments under tight supervision with little actual control over their environment. Decisions have come from the top down and announced at faculty meetings.

The new workplace demands that instructional team members be firmly behind the dramatic changes affecting the performance of their assignments. An effective manager will exercise a new type of leadership. He/she will function less as a controller and more as a coordinator, focuser, and facilitator. The success of the demonstration program depends upon a manager that can delegate some of the control and accountability to staff members.

The timeline of the project will require that decisions be made quickly in order for training activities to continue on schedule. Due to the uniqueness of the program design, it is practically impossible to anticipate or plan for all factors that will influence the effectiveness of the project. If problem solving and decision making become the responsibility of the instructors, project implementation will proceed much more smoothly and efficiently.

Organizational Education and Training

It is difficult to direct strategic planning efforts and communicate effectively within the organization when working under stringent time constraints. Often misunderstanding may occur which will, eventually, hamper the effectiveness of the project. It is imperative that all administrators, staff, and business personnel be fully informed in regard to budgetary allocations, in-kind match requirements, accountability, reporting regulations, site visitations, project monitoring, and the evaluation process before program activities commence. The formation of a steering committee can enhance communication and program effectiveness.

The role of the steering committee may be defined to assist in planning, to make recommendations, and to facilitate communication. The new program, especially a demonstration program, will have high visibility locally and nationally. All players both in education and industry need to have a clear understanding of the model program's goals, activities, and outcomes.

Orientation sessions designed to inform and develop staff support for the program should be conducted before actual implementation of the program is initiated. These efforts will consume a significant portion of the project director's time; but ultimately, the benefit will become evident to all those involved. Training will also serve to eliminate rumors and clarify any misunderstanding that may have developed in the process. Information communicated will assist to incorporate the new program into the organizational structure and to develop commitment from employees.

Business/Education Partnerships

Programs conducted in cooperation with local business and industry assume a much different profile than traditional education and training. Many factors affect program implementation and operation which are beyond the immediate control of the project director and staff members.

The selection of business sponsors should be done with care. Before an agreement is reached, a discussion of all aspects of the proposed program need to be covered and understood by business management and administration of the school district.

The responsibilities of each participant needs to be defined and acknowledged; expectations in regard to the amount of management and employee time need to be negotiated. If grant funding is anticipated, requirements for in-kind match and donation of resources should be outlined and committed. Company liability, supervision responsibilities, salary issues, insurance coverage, and lines of communication need to be clearly defined, agreed upon, and distributed in written form to all involved.

Too often educators overlook the initial groundwork that must be done before beginning a partnership with business and industry. This occurs, not due to a lack of emphasis on preparation and planning, but because educators usually have no knowledge base or experience working directly in the business world. There is little common ground between the two parties; therefore, many details are not anticipated and pose potential roadblocks to success.

There are many factors that influence a cooperative agreement between education and industry. In our case, specifically, economic conditions in the county affected the operation of the industry-based training component of the project. Business sponsors found it difficult to schedule as many students for training as they originally projected. Also it became impossible for business to compensate interns for time spent in training activities. The economic downturn detracted from the original projected outcomes.

In summary, the relationship between the educational agency and the businesses must be quite strong. If sufficient time has been spent establishing and nurturing the relationships between the people responsible for performing training and supervision,

project activities will continue as planned. If channels of communication are inadequate or people are unsure of their exact role in the project, outcomes will be weakened or will not develop as anticipated. All people must feel comfortable in being effective when working to solve problems and function as a member of the team.

CONCLUSIONS

Making the decision to replicate a demonstration program very well could be one of the most exciting choices that an educator makes during his/her career. The experience gained through the planning and implementation stages of the project will be unlike any other situation that one is likely to encounter.

The implementation of innovative, creative programs which are sponsored by conservative institutions, provincial administrators, and teachers who are traditionally governed by autocratic management is incongruent.

All those involved in the project must work together to become a member of the project team. The project director and staff members must have the support of their immediate supervisor. They must be given the freedom and latitude to be able to address and solve problems as they occur. Adjustments or variations in policy and procedure must be made to facilitate the smooth operation of project training activities. In short, all those involved in the project must be committed to the concept, be curious and interested in learning, and be a risk taker. As in any program, the actual key to success in not the funding, the facility, the curriculum, or the equipment, it is the people.

North Clackamas School District

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